REMARKS

The Office Action dated October 7, 2008 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 13 and 19-21 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claim 7 has been cancelled without prejudice or disclaimer. No new matter has been added and no new issues are raised that require further consideration or search.

The Office Action indicated that claims 17, 18 and 22-26 have been allowed and claims 10 and 16 contain allowable subject matter. Applicant again wishes to thank the Examiner for the allowance of these claims. However, claims 1-6, 8, 9, 11-15 and 19-21 are respectfully submitted for reconsideration.

Claims 1-3, 5-9, 11, 12 and 21-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Usui et al. (JP404242106A) in view of Mack et al. (U.S. Patent No. 6,377,700), Teitelbaum (U.S. Patent No. 5,872,834) and further in view of Picone et al. (U.S. Patent No. 5,293,452). The Office Action took the position that the combination of the above four references teach all of the subject matter recited in the claims. More particularly, the Office Action took the position that Usui, Teitelbaum and Picone disclose all of the claim recitations except for generating a facial texture bit map. The Office Action then relied on Mack as allegedly curing this deficiency. This rejection is respectfully traversed for at least the following reasons.

Claim 1, upon which claims 2-6 and 8-12 are dependent, recites an apparatus that includes at least one camera directed toward a user's face and configured to record at least two still images of a user from at least first and second angles of view and to obtain at least one additional still image of the user's face in addition to the at least two still images. The apparatus also includes a processor connected to the at least one camera. The processor is configured to process the at least two still images obtained by the at least one camera and to generate a 3-dimensional model of the user's face using the at least two still images. The processor is also configured to generate a facial texture bit map of the user's face using that at least one additional still image of the user's face. The processor is also configured to compare the generated model with the stored user profile information to determine whether the user is authorized to access the system, the processor includes an access device configured to grant access to the system when the generated model matches the profile information of one of the authorized users stored in a memory, thereby indicating recognition and authorization of the user, and an updater configured to update the profile information of the one of the authorized users with the generated model after each grant of access by the access device such that the updated profile information comprises an average of the generated model and the previously stored profile information.

Claim 13, upon which claims 14-16 are dependent, recites an apparatus that includes at least one charged coupled camera configured to obtain at least two still images of a user's face from at least two different predetermined angles of view and to

obtain at least one additional still image of the user's face in addition to the at least two still images. The apparatus also includes a processor. The processor is configured to connect to the at least one charge coupled camera and the light source to generate a 3-dimensional model of the user's face using the at least two still images. The processor is also configured to generate a facial texture bit map of the user's face using the at least one additional still image. The processor is further configured to compare the 3-dimensional model and the facial texture bit map to the stored user profile information contained in a memory and to access the system when the generated 3-dimensional model and facial texture bit map match a user profile stored in the memory.

Claim 17 recites a method that includes obtaining, by a mobile apparatus, at least two 2-dimensional still images of a user from at least two different angles of view, sending the images to a server over a network, generating, by the server, a 3-dimensional model of the user's face from the obtained images, determining, by the server, the user's facial shape using the generated 3-dimensional model, sending the 3-dimensional model and the user's facial shape to the mobile apparatus. The method further includes comparing, at the mobile apparatus, the determined facial shape with profile information stored in memory, the profile information comprising data relating to the facial shape of authorized users, and determining, at the mobile apparatus whether the determined facial shape matches the profile information stored in the memory.

Claim 20 recites an apparatus that includes obtaining means for obtaining at least two still images of a user's face from at least two different predetermined angles of view

and to obtain at least one additional still image of the user's face in addition to the at least two still images. The apparatus also includes generating means connected to the at least one charge coupled device camera and the light source, for generating a 3-dimensional model of the user's face using the at least two still images, and for generating a facial texture but map of the user's face using the at least one additional still image. The generating means compares the 3-dimensional model and the facial texture bit map to the stored user profile information contained in said storing means, and for accessing to the system when the generated 3-dimensional model and facial texture bit map match a user profile stored in said storing means.

Claim 21 recites an apparatus that includes recording means directed toward a user's face and for recording at least two still images of a user from at least first and second angles of view. The recording means also records at least one additional still image of the user's face in addition to the at least two still images. The apparatus also includes processing means connected to said at least one recording means for processing the at least two still images obtained by said at least one recording means. The processing means further performs generating a 3-dimensional model of the user's face using the at least two still images. The processing means further performs comparing the generated 3-dimensional model with the stored user profile information for determining whether the user is authorized to access a system. The processing means further includes an access granting means for granting access to the system when the generated model matches the profile information of one of the authorized users stored in the storing

means, thereby indicating recognition and authorization of the user. The processing means further includes updating means for updating the profile information of the one of the authorized users with the generated model after each granting of access by the access granting means such that the updated profile information comprises an average of the generated model and the previously stored profile information.

As will be discussed below, the combination of Usui, Mack, Teitelbaum and Picone do not teach the subject matter recited in the claims.

Usui, Teitelbaum, Picone and Mack do not disclose all of the subject matter recited in any of independent claims 1, 13, 20 and 21. Applicant submits that these claims are in condition for allowance and should be properly considered and allowed without further delay for at least the reasons discussed below.

Applicant submits that Usui, Teitelbaum, Picone and Mack fail to teach or suggest,

> "a processor...to generate a 3-dimensional model of the user's face using the at least two still images and to generate a facial texture bit map of the user's face using the at least one additional still image of the user's face, and to compare the generated model and the facial texture bit map with the stored user profile information to determine whether the user is authorized to access the system", as recited, in part, in amended claim 1, and similarly in claims 13, 20 and 21 (emphasis added).

It has already been established that Usui, Teitelbaum and Picone fail to disclose generating a user's "facial texture bit map", as recited in the claims (see pages 9-14 of the Office Action dated October 29, 2008). The Office Action again relied on Mack as

allegedly curing this deficiency of Usui, Teitelbaum and Picone with respect to claims 1, 13, 20 and 21. Applicant submits that Mack does not disclose the deficiencies of Usui, Teitelbaum and Picone with respect to the currently pending claims.

Mack is directed to capturing stereoscopic images. Mack further discloses creating three-dimensional (3-D) models of real objects, where a multitude of images of real objects are taken from different positions to exploit the differences of the object's projections (see column 2, lines 40-47 of Mack). The two or more images (stereoscopic images) are processed into 3-D models.

The Office Action stated that "it is important to note that a facial texture bitmap is simply an image of a face...and texture is defined as the spatial variation in pixel intensities..." (see page 3, lines 5-8 of the Office Action). Applicants submit that regardless of how the facial texture bitmap is associated with a facial image, Mack fails to disclose "at least one camera...configured to record at least two still images of a user...and to obtain at least one additional still image of the user's face in addition to the at least two still images...and a processor...configured to process the at least two still images...to generate a 3-dimensional model of the user's face...and to generate a facial texture bit map of the user's face using the at least one additional still image of the user's face", as recited, in part, in independent claim 1, and similarly in independent claims 13, 17, 20 and 21 (emphasis added).

Referring to column 3 of Mack, a process is illustrated in FIGS. 3a-3c of Mack, which includes generating a 3-D model of a user's face by capturing images from

different angles (see column 3, lines 7-10 of Mack). First the 2-D models of the images (X, Y) are compared and the overlapping regions are expanded to a 3-D model by adding a third (depth) dimension based on points which are shared by the plurality of images. In other words 2-D models having overlapping 2-D data are combined to estimate a 3-D model one point (X, Y, Z) at a time. In generating the 3-D model, Mack discloses that the same plurality of images are used to estimate the points used in the 3-D model. Mack does not disclose that an additional image is used to obtain a facial texture bitmap and that the bitmap and the 3-D model are compared to the stored profile information, as recited in the pending claims.

Mack discloses that all of the images obtained are part of the 3-D model generating system. Referring to column 3, line 60 through column 4, line 10 of Mack, "the images may be stored in the imaging devices 12 and 13 to be processed at a later time eliminating the need for a computing device in the 3-D imaging device system." As can be seen from the disclosure of Mack, the images are used solely for obtaining a 3-D model and not for obtaining a facial texture bit map.

Referring to column 6, lines 7-14 of Mack, a pair of monochrome imaging devices 22 and 23 capture a stereoscopic image of a target object. The imaging devices 22 and 23, and the color imaging device 24 may take an image of the target object simultaneously. The captured position information obtained from the imaging devices 22 and 23 may be combined with the textural data of the color imaging device 24 for a 3-D model. The teachings of Mack are limited to using 2-D images to obtain 3-D models.

All of the images obtained in Mack are part of the 3-D model and no additional image is taken to generate a facial texture bit map. Certainly if Mack does not disclose obtaining an additional image to generate a facial texture bit map, then Mack cannot possibly obtain an additional image to generate a facial texture bit map that is used to compare to stored user profile information.

Page 12, paragraph [0020] of the specification of the present application explicitly discloses generating a 3-D model **and** generating a facial texture bit map based on a normal picture of the user's face and comparing the 3-D model and the facial texture bit map with pre-stored user profile information. Paragraph [0019] of the specification describes generating the 3-D model using any suitable well-known surface reconstruction algorithm. As can be clearly understood from the specification, a 3-D model is generated separately from generating a facial texture bit map. Then the 3-D model and the facial texture bit map are both compared to pre-stored user profile information to authenticate the user. Mack is strictly limited to generating a 3-D model of a user's face and provides no support for generating a facial texture bit map.

Claim 1 clearly recites more than simply creating a 3-D model using obtained images. For example, claim 1 recites, in part, "at least one camera...configured to record at least two still images of a user...and to obtain at least one additional still image of the user's face in addition to the at least two still images...and a processor...configured to process the at least two still images...to generate a 3-dimensional model of the user's face...and to generate a facial texture bit map of the user's face using the at least one

additional still image of the user's face", as recited, in part, in independent claim 1, and similarly in independent claims 13, 17, 20 and 21. At best, Mack discloses generating a 3-D model but does not disclose generating a facial texture bit map of a face using an additional image and using that bit map and the 3-D model to compare to the user profile information.

Therefore, Usui, Teitelbaum, Picone, and Mack fail to disclose all of the subject matter of independent claims 1, 13, 20 and 21. By virtue of dependency, those claim dependent thereon should also be allowed. Withdrawal of the rejections of those claims and an allowance of claims 1-6 and 8-26 is respectfully requested.

Claims 4, 13-15 and 19 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Usui, Mack, Teitelbaum, Picone and further in view of Sadovnik (U.S. Patent No. 5,497,430).

Usui, Mack, Teitelbaum and Picone are discussed above. Sadovnik is directed to operating an image recognition system including providing a neural network including a plurality of input neurons. However, Applicant submits that Sadovnik fails to cure the deficiencies discussed above regarding claim 1.

Based at least on the above, Applicant submits that Usui, Mack, Teitelbaum and Picone fail to disclose or suggest all of the features recited in claims 4, 13-15 and 19. Accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

Applicant submits that each of claims 1-6 and 8-26 recites features that are neither disclosed nor suggested in any of the cited references. Accordingly, it is respectfully requested that each of claims 1-6 and 8-26 be allowed and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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